

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Mathrubootham Janakiraman et al.

Art Unit 2155

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For METHOD AND SYSTEM FOR SELECTIVELY VIEWING PARTICIPANTS OF A
MULTIMEDIA NETWORK CONFERENCE

Examiner Asad M. Nawaz

June 29, 2009

RESPONSE TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

TO THE COMMISSIONER FOR PATENTS,

SIR:

In response to the Notification of Non-Compliant Appeal Brief, dated May 28, 2009, please replace the Summary of Claimed Subject Matter, which begins at page 2 of the Appeal Brief, with the following **Amended Summary of Claimed Subject Matter**, which begins on page 2 of this paper.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following summary correlates claim elements to embodiments described in the application specification, but does not in any manner limit claim interpretation. Rather, the following summary is provided only to facilitate the Board's understanding of the subject matter of this appeal. The elements of the claims presented in this section have been bolded and italicized for convenient identification.

Aspects of the present invention provides "a method and system for intelligently selecting a single video stream from video streams originating from multiple participants of a multimedia network conference and sending the selected video stream to a client for viewing."¹ Application, page 3, lines 11-15. "In accordance with the invention, periodically, each of the participants is assigned a weight that is dynamically determined"² (Application, page 12, line 27 to page 13, line 3) as "a function of the participants' activity state variables . . . and a set of tunable parameters called 'participant selection control parameters.'"³ Application, page 17, lines 3-6. "The participant with the highest weight among all the participants is then selected for viewing by the client, i.e., the video stream from that participant is sent to the client."⁴ Application, page 3, lines 22-25.

Claim 10 is directed to *a system for conducting a multimedia conference*.⁵ See Application, page 3, lines 11-14 ("the present invention provides a . . . system for intelligently selecting a single video stream from video streams originating from multiple participants of a multimedia network conference."). The system includes *a plurality of participants each providing multimedia conferencing data including a video signal and an audio signal*. For example, the embodiment of the invention illustrated in Figure 2 of the present application "shows two multicast-capable clients 102, 104 connected to the multicast network 100."⁶ Application, page 10, lines 9-11. Each of the two multicast clients provides outgoing "audio and

¹Application, page 3, lines 11-15.

²Application, page 12, line 27 to page 13, line 3.

³Application, page 17, lines 3-6.

⁴Application, page 3, lines 22-25.

⁵See Application, page 3, lines 11-14 ("the present invention provides a . . . system for intelligently selecting a single video stream from video streams originating from multiple participants of a multimedia network conference.")

⁶Application, page 10, lines 9-11.

video streams 110 . . . for delivery to all the other participants."⁷ Application, page 10, lines 19-21. The system of claim 10 also includes *a client in conference with the participants, and is capable of receiving the video signal corresponding to one of the participants at a time.* For example, the embodiment of the invention illustrated in Figure 2 includes a client (e.g., 112, 114) who "can only receive the video stream of one participant at a time."⁸ Application, page 12, lines 26-27; see also, page 9, lines 25-27.

The system of claim 10 includes *a bridge server connected to the participants through a network and having a point-to-point connection with the client.* As described by the specification, embodiments of the bridge server allow "a client (e.g., client 112) that is not multicast-capable or multicast-connected [to] participate in a network conference."⁹ Application, page 11, lines 9-11. As explained by the present application in reference to FIG. 2, "the bridge server 120 is connected to the multi-cast network 100"¹⁰ (Application, page 11, lines 11-12) and "functions as a proxy for connecting the client 112 to a multimedia conference."¹¹ Application, page 11, lines 14-15. Specifically, "[w]hen the client 112 wants to participate in a multimedia network conference, it places a point-to-point call to the bridge server 120."¹² Application, page 11, lines 15-18. Accordingly, "[t]he bridge server, on behalf of the client, then joins the multicast group defining the conference."¹³ Application, page 11, lines 18-20. The bridge server sends a video stream to the client which "contains only one video substream representing only one of the participants."¹⁴ Application, page 12, lines 16-19.

In order to select the video stream for sending to the client from the plurality of video streams originating from the participants of the network conference, the system includes *a participant state table and a participant selection control parameter stored in memory.* The *participant state table indicat[es] an activity state variable for each participant.*¹⁵ See Application, page 13, lines 21-23; page 14, lines 24-27; Figure 4. The *activity state variable include[s] values and statistics associated with the participant's video signal and audio*

⁷ Application, page 10, lines 19-21.

⁸ Application, page 12, lines 26-27; See also, page 9, lines 25-27.

⁹ Application, page 11, lines 9-11.

¹⁰ Application, page 11, lines 11-12.

¹¹ Application, page 11, lines 14-15.

¹² Application, page 11, lines 15-18.

¹³ Application, page 11, lines 18-20.

¹⁴ Application, page 12, lines 16-19.

¹⁵ See Application, page 13, lines 21-23; page 14, lines 24-27; Figure 4.

signal,¹⁶ Application, page 14, lines 25-27) "such as whether the participant is being shown to the client, how long the participant has been shown or not shown, etc."¹⁷ Application, page 3, lines 18-20. "The activity states of [each] participant are then used in the weight assignment process" discussed below. Application, page 13, lines 14-16.

The participant selection control parameter is *received when the multimedia conference is set up*¹⁸ (Application, page 19, lines 8-9) *for tuning a video switching stream behavior*¹⁹ (see Application, page 17, lines 6-9; page 19, lines 5-6) during the conference. As shown in Table 1 of the present application, each received participant selection control parameter has a constant/fixed value which *affects the outcome of the weight computation* discussed below²⁰. Application, page 17, lines 3-6. "[T]he values of the control parameters can be tailored to obtain desired video stream switching behavior . . . to suit the nature of format of the network conference." Application, page 19, lines 4-8. Thus, "[t]he values of the parameters may be specified when the conference is set up," but do not change during the network conference. Application, page 19, lines 8-9. Accordingly, each *participant selection control parameter has a static display constraint on a selection of a video signal*.²¹ Application, page 17, lines 3-6.

For example, the exemplary ~~participant selection control~~ parameters in Table 1 include a ~~"Minimum Shown Time"~~ and a ~~"Minimum Shown Time If Active."~~ The ~~"Minimum Shown Time"~~ control parameter specifies the minimum ~~period of time (8 seconds)~~ that a selected participant's video stream will be displayed on the client stream.²² The ~~"Minimum Shown Time If Active"~~ control parameter specifies the minimum period of time (15 seconds) that a selected participant's video stream will be displayed on the client screen if the participant is still talking for this period of time."²³ These two parameters ~~"help to prevent a flurry of abrupt jumps from one participant to another. For example, if these parameters are not used and the switching is based only on which participant happens to be making the loudest sound, then the screen image may be switched back and forth too quickly and too frequently between the talking participants,~~

¹⁶ Application, page 14, lines 25-27.

¹⁷ Application, page 3, lines 18-20.

¹⁸ Application, page 19, lines 8-9.

¹⁹ See Application, page 17, lines 6-9; page 19, lines 5-6.

²⁰ Application, page 17, lines 3-6.

²¹ Application, page 17, lines 3-6.

²² Application, page 18, Table 1, Row 2.

²³ Application, page 18, Table 1, Row 3.

resulting in an unpleasant client experience.”²⁴ -an "Active Cycle Time" and a "Complete Active Cycle Time." The "Active Cycle Time" control selection parameter specifies "[t]he time period that an actively talking participant's video stream is displayed by the client if only this participant is talking. Application, page 18, Table 1. The exemplary value in Table 1 of the "Active Cycle Time" control parameter is 300. This value does not change during the conference. Instead, the video stream switching behavior is further controlled by the "Complete Active Cycle Time" parameter which is a "control that helps enforce Active Cycle Time for participants." Application, page 19, Table 1. The exemplary value in Table 1 of the "Complete Active Cycle Time" control parameter is 7000.

During the conference, the bridge server *receiv[es] simultaneously the multimedia conferencing data including the video signal from each of the participants*²⁵ (Application, page 11, lines 21-26; See also Figure 3) and *update[s] the activity state variable stored in the memory for each participant in the participant state table according to changes in a data information and a control information of the participant's video signal and audio signal.*²⁶ Application, page 13, lines 11-23 ("In this embodiment, several participant events are defined and used to update activity states of the participant. The activity states of the participant are then used in the weight assignment process. In this regard, the multimedia streams received by the bridge server from the multicast group include both data and control information. In response to changes in both of these pieces of information, the multicast conference server 122 generates the participant events. As a part of handling these events, the multicast conference server 122 updates a participant state table 150 associated with the conference."). The bridge server *periodically comput[es] a weight of [] each participant based on the activity state variable of [] each participant and the participant selection control parameter.*²⁷ Application, page 17, lines 3-6; page 13, lines 1-2.

²⁴ Application, page 21, lines 12-19.

²⁵ Application, page 11, lines 21-26; See also Figure 3.

²⁶ Application, page 13, lines 11-23 ("In this embodiment, several participant events are defined and used to update activity states of the participant. The activity states of the participant are then used in the weight assignment process. In this regard, the multimedia streams received by the bridge server from the multicast group include both data and control information. In response to changes in both of these pieces of information, the multicast conference server 122 generates the participant events. As a part of handling these events, the multicast conference server 122 updates a participant state table 150 associated with the conference.").

²⁷ Application, page 17, lines 3-6; page 13, lines 1-2.

In particular, *the bridge server assign[s] a predetermined weight to at least one of the plurality of participants for a duration specified by the static display constraint.* For example, ~~for if "the participant is being shown (step 184), it is determined whether the~~ ~~SecsSinceLastStartedShowing value is less than~~ and talking but has been shown for longer than the Minimum Shown Time If Active (step 198), then it is determined (step 192). ~~If so, the~~ ~~weight is set to be MAXWEIGHT (step 194) 200) whether the value of~~ SecsSinceLastStartedShowing is less than Active Cycle Time, which is functions roughly as an upper limit of how long a very participant who is continuously talking should be continuously shown. If the participant has been shown for less than Active Cycle Time, the weight is set (step 202) to Complete Active Cycle Time, which is a relative large value, to ensure enhance the likelihood that this the active participant will be selected. This guarantees that a participant, once selected for viewing, will be shown for at least the Minimum Shown Time (e.g., 8 seconds)."²⁸ again." Application, page 21, line 20 - page 22, line 3.

After the bridge server has computed a weight for the participants, the bridge server *identify[ies] a participant having a highest weight among the participants, and select[s] . . . the video signal corresponding to the identified participant having the highest weight for transmission to the client for viewing.*²⁹ Application, page 3, lines 22-25; page 16, lines 16-19; page 16, line 24 to page 17, line 1.

Claim 24 is directed to *a method for selecting one video signal from a plurality of video signal for forwarding to a client.*³⁰ Application, page 12, lines 10-12. Each video signal correspond[s] to a participant of multiple participants of a multimedia conference.³¹ Application, page 12, lines 4-6. For example, "during the conference the bridge server receives a video and audio stream from the client . . . [and] also receives the video and audio data from the other participants." Application, page 11, lines 21-26. "In one implementation, . . . multicast conference server . . . receives one audio stream 136 and one video stream for the conference from the multicast network. The audio stream 136 contains a mixture of audio data from the other participants. The video stream 138 contains several substreams [e.g., signals], each carrying video data from one participant." Application, page 11, line 27-page 12, line 6. "These

²⁸ Application, page 20, lines 19-26; See also Figure 6.

²⁹ Application, page 3, lines 22-25; page 16, lines 16-19; page 16, line 24 to page 17, line 1.

³⁰ Application, page 12, lines 10-12.

³¹ Application, page 12, lines 4-6.

substreams are sent to a bridge service component 126, which is responsible for selecting one of the substreams for forwarding to the client." Application, page 12, lines 9-12.

The method includes *receiving a participant selection control parameter for the multimedia conference when the conference is being set up*.³² Application, page 19, lines 8-9. The *participant selection control parameter ha[s] a static display constraint of selecting the one video signal*.³³ Application, page 17, lines 3-6. For example, as ~~discussed~~ explained above, the exemplary participant selection control parameter in Table 1, Active Cycle Time, functions roughly as an upper limit of how long a participant who is continuously talking should be continuously shown. Application, page 21, line 20 - page 22, line 3.

Additionally, the participant selection control parameters in Table 1, include "Minimum Shown Time" and "Minimum Shown Time If Active" which specify minimum times for showing a participant's video stream.³⁴ Application, page 18, Table 1, Rows 2-3. Specifically, the "Minimum Shown Time" control parameter specifies the minimum period of time (8 seconds) that a selected participant's video stream will be displayed on the client stream. Application, page 18, Table 1, Row 2. The "Minimum Shown Time If Active" control parameter specifies the minimum period of time (15 seconds) that a selected participant's video stream will be displayed on the client screen if the participant is still talking for this period of time." Application, page 18, Table 1, Row 3. These two parameters "help to prevent a flurry of abrupt jumps from one participant to another. For example, if these parameters are not used and the switching is based only on which participant happens to be making the loudest sound, then the screen image may be switched back and forth too quickly and too frequently between the talking participants, resulting in an unpleasant client experience."³⁵ Application, page 21, lines 12-19.

The method of claim 24 includes *receiving simultaneously multimedia conferencing data . . . that includ[es] the plurality of video signals from the participants*³⁶ (Application, page 11, lines 21-26; See also Figure 3) and *monitoring participant events of the multimedia conference*³⁷. Application, page 3, lines 16-20. The *participant events [are] generated in response to changes in the data information and the control information of the multimedia*

³² Application, page 19, lines 8-9.

³³ Application, page 17, lines 3-6.

³⁴ Application, page 18, Table 1, Rows 2-3.

³⁵ Application, page 21, lines 12-19.

³⁶ Application, page 11, lines 21-26; See also Figure 3.

³⁷ Application, page 3, lines 16-20.

*conferencing data.*³⁸ Application, page 13, lines 11-23 ("In this embodiment, several participant events are defined and used to update activity states of the participant. The activity states of the participant are then used in the weight assignment process. In this regard, the multimedia streams received by the bridge server from the multicast group include both data and control information. In response to changes in both of these pieces of information, the multicast conference server 122 generates the participant events. As a part of handling these events, the multicast conference server 122 updates a participant state table 150 associated with the conference."). For example, the participant events may include "NewSubStream" for indicating that the participant started sending video and "SubStreamRemoved" for indicating that the participant stopped sending video.³⁹ Application, page 13, lines 26-27.

Additionally, the method of claim 24 includes *providing a participant state table . . . indicating an activity state variable for each participant of the multimedia conference*⁴⁰ (see Application, page 13, lines 21-23; page 14, lines 24-27; Figure 4) and *updating at least one of the activity state variables in the participant state table according to the participant events.* The *activity state variable includ[es] values and statistics associated with the participant's multimedia conference data,*⁴¹ (Application, page 12, 27- page 13, line 5 ("In accordance with the invention, periodically, each of the participants is assigned a weight that is dynamically determined based on the participants' conferencing activity state data, which in turn **are updated according to participant events associated with the video and audio streams.**" Emphasis added); see also, Application, page 14, lines 25-27) "such as whether the participant is being shown to the client, how long the participant has been shown or not shown, etc."⁴² Application, page 3, lines 18-20.

The method of claim 24 includes *periodically computing a weight for each of the participants based on the activity state variable of [] each participant and the participant*

³⁸ ~~Application, page 13, lines 11-23 ("In this embodiment, several participant events are defined and used to update activity states of the participant. The activity states of the participant are then used in the weight assignment process. In this regard, the multimedia streams received by the bridge server from the multicast group include both data and control information. In response to changes in both of these pieces of information, the multicast conference server 122 generates the participant events. As a part of handling these events, the multicast conference server 122 updates a participant state table 150 associated with the conference.").~~

³⁹ ~~Application, page 13, lines 26-27.~~

⁴⁰ ~~See Application, page 13, lines 21-23; page 14, lines 24-27; Figure 4.~~

⁴¹ ~~Application, page 14, lines 25-27.~~

⁴² ~~Application, page 3, lines 18-20.~~

*selection control parameter*⁴³ (Application, page 17, lines 3-6; page 13, lines 1-2) and identifying a participant having a highest weight among the participants.⁴⁴ Application, page 3, lines 22-25; page 16, lines 16-19. Accordingly, *the [] video signal corresponding to the participant having the highest weight is select[ed] from the received multimedia conference data . . . for viewing by the client.*⁴⁵ Application, page 3, lines 22-25; page 16, line 24 to page 17, line 1.

⁴³ Application, page 17, lines 3-6; page 13, lines 1-2.

⁴⁴ Application, page 3, lines 22-25; page 16, lines 16-19.

⁴⁵ Application, page 3, lines 22-25; page 16, line 24 to page 17, line 1.

REMARKS

Applicants submit that the Appeal Brief, as corrected by the Amended Summary of Claimed Subject Matter pursuant to MPEP § 1205.03(B), is in compliance with 37 C.F.R. 41.37 and respectfully request a substantive evaluation of the issues presented. In particular, as requested by the Office, Applicants have included page and line numbers and examples supporting the limitation in claim 10 which recites "said participant selection control parameter being received when the multimedia conference is set up, said participant control selection parameter having a static display constraint on a selection of a video signal." Additionally, Applicants have included page and line numbers and examples supporting the limitation in claim 24 which recites "each video signal corresponding to a participant of multiple participants of a multimedia conference" and "said participant events associated with the multimedia conferencing data of the participants."

Applicants do not believe a fee is due. If, however, the Commissioner determines otherwise, other deficient fees may be charged during the entire pendency of this application to Deposit Account No. 19-1345.

Respectfully submitted,

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